

WHAT IS CLAIMED IS:

1. A steam turbine, comprising:
  - a casing;
  - a rotor rotatably installed in the casing and having a first space formed therebetween;
  - a plurality of turbine stages disposed in the turbine, at least one of the turbine stages including a turbine nozzle and including a moving blade that is fixed to the rotor;
  - a steam pass including the at least one turbine stage;
  - a nozzle box, positioned in the first space between the casing and the rotor, for providing a heated steam to the steam pass; and
  - at least one cover plate positioned adjacent to an outer surface of the nozzle box, to cover at least a portion of the nozzle box.
2. A steam turbine according to claim 1, wherein the nozzle box includes at least one wall, further comprising:
  - a steam cooling path provided in the wall; and
  - at least one cooling steam outlet port that traverses through the wall, to pass cooling steam inside the cooling steam path toward the cover plate.
3. A steam turbine according to claim 1,
  - wherein the at least one cover plate extends essentially around the whole outer surface of the nozzle box.

4. A steam turbine according to claim 3, wherein the at least one cover plate comprises a plurality of cover plates, and

wherein a cooling opening exists between at least two adjacent cover plates, the cooling opening for passing cooling steam.

5. A steam turbine according to claim 3, wherein the at least one cover plate comprises at least one cooling opening extending through the at least one cover plate.

6. A steam turbine according to claim 1, wherein the at least one cover plate extends around the whole outer surface of the nozzle box.

7. A steam turbine according to claim 6, wherein the nozzle box includes at least one wall, further comprising:

a steam cooling path provided in the wall;

at least one cooling steam outlet port that traverses through the wall, to pass a cooling steam inside the cooling steam path toward the at least one cover plate;

a cooling steam inlet that supplies the cooling steam into the cooling steam path;  
and

a cooling steam outlet that recovers the cooling steam that has passed through a second space between the nozzle box and the at least one cover plate.

8. A steam turbine according to claim 6, further comprising:

a partition that divides a second space between the nozzle box and the at least one cover plate into at least two divided spaces;

wherein each of the at least two divided spaces comprises:

a cooling steam inlet that supplies the cooling steam into the divided space; and

a cooling steam outlet that recover the cooling steam from the divided space.

9. A steam turbine according to claim 6, wherein the nozzle box includes at least one wall, further comprising:

a steam cooling path provided in the wall;

at least one cooling steam outlet port that traverses through the wall, to pass a cooling steam in the cooling steam path toward a second space between the nozzle box and the at least one cover plate; and

a cooling steam inlet port that recovers the cooling steam from the second space between the wall and the at least one cover plate to flow into the cooling steam path.

10. A steam turbine according to claim 9, further comprising:

a partition that divides the second space between the wall and the at least one cover plate into at least two divided spaces;

wherein each of the at least two divided spaces comprises:

a cooling steam inlet that supplies the cooling steam into the divided space; and

a cooling steam outlet that recover the cooling steam from the divided space.

11. A steam turbine according to claim 9, wherein the at least one cover plate comprises a plurality of cover plates, each of the cover plates being shaped to enclose a respective second space between the wall and the respective cover plate,

wherein each respective second space between the wall and the respective cover plate comprises:

at least one cooling steam outlet port that traverses through the wall, to pass a cooling steam in the cooling steam path toward the respective second space; and

a cooling steam inlet port that traverses the wall, to recover cooling steam from the respective second space between the wall and the respective cover plate to flow into the cooling steam path.

12. A steam turbine according to claim 11, wherein each respective second space between the wall and the respective cover plate comprises partitions, to create multiple flow paths for the cooling steam from the cooling steam outlet port toward the cooling steam inlet port.

13. A steam turbine according to claim 4, wherein the at least one cover plate including a plurality of plates, the plates spaced at different distance from the outer surface of the nozzle box.

14. A steam turbine according to claim 4, further comprising:  
a cooling steam inlet that supplies the cooling steam into a second space between the nozzle box and the at least one cover plate; and

a cooling steam outlet that recovers the cooling steam from the second space.

15. A steam turbine according to claim 14, further comprising:  
a partition that divides the second space between the nozzle box and the at least one cover plate into at least two divided spaces.

16. A steam turbine according to claim 15, wherein each of the at least two divided spaces comprises:

a cooling steam inlet formed in the at least one cover plate that supplies the cooling steam into the divided space; and

a cooling steam outlet formed in the at least one cover plate that recover the cooling steam from the divided space.

17. A steam turbine according to claim 15, further comprising:  
a steam pass opening provided in the partition.

18. A steam turbine according to claim 17,  
wherein the partition comprises multiple partitions, each of the partitions having a steam pass opening, the respective steam pass openings arranged so that the cooling steam meanders inside the second space between the nozzle box and the at least one cover plate.

19. A steam turbine according to claim 4, wherein the nozzle box includes a wall, further comprising:  
a steam cooling path provided in the wall;

at least one cooling steam outlet port that traverses through the wall to pass cooling steam inside the cooling steam path toward the at least one cover plate;

a partition that divides a second space between the nozzle box and the at least one cover plate into at least two divided spaces; and

a steam pass opening provided in the partition.

20. A steam turbine according to claim 19, further comprising:

wherein the partition comprises multiple partitions, each of the partitions having a steam pass opening, the respective steam pass openings arranged so that the cooling steam meanders inside the second space between the nozzle box and the at least one cover plate.

21. A steam turbine according to claim 1, wherein the at least one cover plate is a flat plate.

22. A steam turbine according to claim 1, wherein the at least one cover plate is a wave-shaped plate.

23. A steam turbine according to claim 1, further comprising:

a support connected to the at least one cover plate, wherein the support fixes the at least one cover plate at a predetermined distance from the outer surface of the nozzle box.

24. A steam turbine according to claim 1, further comprising:

a support connected to the at least one cover plate, wherein the support fixes the at least one cover plate at a predetermined distance from the outer surface of the nozzle box to form a second space between the at least one cover plate and the nozzle plate, and cooling steam is permitted to flow in the second space.

25. A steam turbine according to claim 24, wherein the at least one cover plate comprises a plurality of cover plates,

wherein at least two cover plates are positioned at different relative distances to the outer surface of the nozzle plate.

26. A steam turbine according to claim 25, wherein the at least two cover plates at least partially overlap with one another relative to the outer surface of the nozzle box, and an additional cooling steam path is formed between the at least two cover plates for cooling steam to flow in parallel to the cooling steam flowing in the second space.

27. A steam turbine according to claim 1, wherein the at least one cover plate comprises a plurality of cover plates,

wherein at least two cover plates are spaced from each other and at least partially overlap with one another relative to the outer surface of the nozzle box.